

ABSTRACT

A method and apparatus are disclosed for establishing a bound on the effect of task interference in an instruction cache shared by multiple tasks. The bound established by the present invention is the maximum number of "live" frames of a given task that are coexistent during the execution of an application. A "live cache frame" contains a block that is accessed in the future without an intervening eviction. The eviction of blocks from a live frame by an interrupt causes a future miss that would not otherwise occur and evictions from live frames are the only evictions that cause misses that would not otherwise occur. The invention provides a more accurate estimate of the maximum additional execution time of a task that results from servicing an interrupt during its execution. Additional accuracy is obtained by exploiting knowledge of the character of an intervening task to achieve a tighter bound, when possible.

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